WHAT IS CLAIMED IS:

1. An optical head apparatus comprising:

a light source for emitting light;

a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium;

a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light;

a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium; and

a second photo detector for receiving the second light and outputting a signal to detect aberration of light converged on the information storage medium.

2. The optical head apparatus according to claim 1, wherein the light dividing means divides the second light into light in a first region near the optical axis and light in a second region distant from the optical axis; and

the optical head apparatus comprises a spherical aberration detecting means for detecting the amount of spherical aberration of light converged on the information storage medium by using at least one of an amount of focus deviation of light in the first region and an amount of focus deviation of light in the second region.

3. The optical head apparatus according to claim 2, wherein the spherical aberration detecting means detects the difference between the amount of focus deviation of light in the first region and the amount of focus deviation of light in the second region as a spherical aberration amount.

4. The optical head apparatus according to claim 2, wherein a cross sectional shape of light used for the converging optical system is substantially circular with a first radius, and a first region that is a concentric circle of the substantial circle and has a second radius smaller than the first radius and a second region that is outside of the first region and inside of the substantial

circle with the first radius are provided.

5. The optical head apparatus according to claim 2, wherein the amount of change in the amount of focus deviation of light in the first region is equal to that in the amount of focus deviation of light in the second region when the relative distance between the information storage medium and the light converging means varies.

6. The optical head apparatus according to claim 2, wherein the second photo detector has a first photo detection region for detecting light in the first region and a second photo detection region for detecting light in the second region; and the first photo detection region is arranged in a portion nearer to the optical axis of the first light divided by the light dividing means as compared with the second photo detection region.

7. The optical head apparatus according to claim 2, wherein the second photo detector has a first photo detection region for detecting light in the first region and a second photo detection region for detecting light in the second region, and the first photo detection region and the second photo detection region partially overlap with each other.

8. The optical head apparatus according to claim 2, wherein the converging optical system comprises a spherical aberration correcting means for changing spherical aberration of light converged on the information storage medium, and the spherical aberration correcting means operates by receiving a signal from the spherical aberration detecting means.

9. The optical head apparatus according to claim 1, wherein the information storage medium has tracks with a certain pitch,

the light dividing means divides a region in which the +first order light and the zero order light diffracted by the tracks are overlapped into an inner region +1A and an outer region +1B surrounding the region +1A, and divides a region in which the –first order light and the zero order light diffracted by the tracks are overlapped into an inner region –1A and an outer region –1B surrounding the region –1A; and

the optical head apparatus further comprises a tilt detecting means for detecting an amount of tilt toward the direction of tracks between the

information storage medium and the converging optical system on the basis of a difference signal between a signal RT+ and a signal –RT, wherein the signal RT+ is a sum signal of signals in proportion to the amount of light in the region +1A and signals in proportion to the amount of light in the region –1B, and the signal RT– is a sum signal of signals in proportion to the amount of light in the region +1B and signals in proportion to the amount of light in the region –1A.

10. An optical head apparatus comprising:

a light source for emitting light;

a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium;

a light dividing means for dividing a returning light reflected by the information storage medium into light in the first region near the optical axis and light in the second region distant from the optical axis and,

one photo detector for receiving the divided light; wherein:

when the difference between the amount of focus deviation of light in the first region and the amount of focus deviation of light in the second region are used to detect a spherical aberration amount of light converged on the information storage medium, the amount of change in the amount of focus deviation of light in the first region is equal to that in the amount of focus deviation of light in the second region when the relative distance between the information storage medium and the light converging means varies.

11. The optical head apparatus according to claim 10, wherein the cross sectional shape of light used for the converging optical system is substantially circular, and when the radius of the substantial circle is a first radius Rb, the first region is a region that is a concentric circle of the substantial circle and has a second radius Rb1 being smaller than the first radius Rb, and the second region is a region that is outside of the first region and inside of the substantial circle with the first radius, when the relative distance between the information storage medium and the ligth converging means varies, the ratio of the first radius Rb to the second radius R1 is determined so that the amount of change in the amount of focus deviation of light in the first region is equal to that in the amount of focus deviation of light in the second region.

12. An optical head apparatus comprising:

a light source for emitting light;

a sub-beam generating means for generating a sub-beam from light emitted from the light source;

a converging optical system comprising a light converging means for converging the sub-beam and a main beam other than the sub-beam onto an information storage medium;

a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light;

a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium;

a second photo detector for receiving a second light and outputting a signal to detect aberration of the light converged on the information storage medium; and

a third photo detector for detecting a returning sub-beam reflected by the information storage medium; wherein

the second photo detector and the third photo detecting means are arranged in the direction substantially perpendicular to the first photo detector.

13. An optical head apparatus comprising:

a light source for emitting light;

a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium;

a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light;

a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium;

a second photo detector for receiving the second light and outputting a signal to detect aberration of the light converged on the information storage medium; and

a judgement means for judging that a distance between the

information storage medium and the converging optical means is in a certain range on the basis of a sum signal of signals from the first photo detector and the second photo detector.

14. An optical head apparatus comprising:

a light source for emitting light;

a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium;

a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light;

a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium; and

a second photo detector for receiving the second light and outputting a signal to detect aberration of the light converged on the information storage medium; wherein:

the area of the detection region of the second photo detector S1 satisfies the following relationship:

$$S1 \leqq 4 \cdot \pi \cdot (d \cdot NA \cdot \alpha)^2 \cdot \eta s / \eta m;$$

wherein ηm denotes an amount of the first light; ηs denotes an amount of the second light; NA denotes a numerical aperture of the converging optical system; α denotes a lateral magnification of the returning path from the information storage medium to the first and second photo detectors of the converging optical system; and d denotes an optical interval between two reflection surfaces of the information storage medium having a plurality of reflecting surfaces.

15. An information recording and reproducing apparatus comprising

an optical head apparatus comprising a light source for emitting light; a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium; a light dividing means for dividing a returning light reflected by the

information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light; a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium; and a second photo detector for receiving the second light and outputting a signal to detect aberration of the light converged on the information storage medium;

a movement means for relatively moving the optical head apparatus and the information storage medium; and

a control means for controlling the optical head apparatus and the movement means.

16. A method for detecting aberration, using:

a light source for emitting light; a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium; a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light; a first photo detector for receiving the first light; and a second photo detector for receiving the second light; wherein

the method reproduces information recorded on the information storage medium by using a signal from the first photo detector and detects aberration of light converged on the information storage medium by using signal from the second photo detector.

17. A method for adjusting an optical head apparatus, wherein

the optical head apparatus comprises: a light source for emitting light; a converging optical system comprising a light converging means for converging light emitted from the light source onto an information storage medium; a light dividing means for dividing a returning light reflected by the information storage medium into light in a first region near the optical axis and light in a second region distance from the optical axis; a rotation mechanism for rotating the light dividing means with respect to the optical axis; a photo detector having a first photo detector for detecting light in the first region and a second photo detector for detecting light in the second region; wherein

the first photo detection region and the second photo detection region are divided by a dividing line substantially parallel to a line passing the center of the respective optical axes, and the first photo detection region is divided into a region 1A and a region 1B by the dividing line and the second photo detection region is divided into a region 2A located on the same side as the region 1A and a region 2B located in the same side as the region 1B by the dividing line; and

the light dividing means is adjusted so that the difference signal between a sum signal S1 of the detection signal from the region 1A and the detection signal from the region 2B and a sum signal S2 of the detection signal from the region 1B and the detection signal from the region 2A is to be zero by using a rotation mechanism.